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OF

THE NEW YORK ACADEMY OF MEDICINE

INCORPORATED 1851

OCTOBER, 1934

PUBLISHED MONTHLY BY

THE NEW YORK ACADEMY OF MEDICINE

2 East 103 Street

New York, N. Y.

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CONTENTS

EDITORIAL:

Transvaluations and Deflations in the History of Medicine and Its Teaching, Fielding H. Garrison..... 579

The Causes and Prevention of Blindness, Arthur J. Bedell.... 593

A Note on Narcotics in Ancient Greece and in Ancient China, Edward H. Hume..... 618

Report of the Council, Charges Against Dr. Fred H. Albee.... 623

Back Number of The Monthly Bulletin Wanted..... 624

Recent Accessions to the Library..... 624

Deaths of Fellows..... 627

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BULLETIN OF
THE NEW YORK
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EDITORIAL

TRANSVALUATIONS AND DEFLATIONS IN THE HISTORY OF MEDICINE AND ITS TEACHING

James Huneker once said that he loved music so well that he hesitated to disclose the seamy side of its practice, in other words, the caprices, professional jealousies and other humbuggeries of the virtuoso or prima donna temperament; which he recounted in "Melomaniacs" and subsequent fictions. Music is, in effect, the noblest and most *spirituel* of all the fine arts, compassing, as Goethe affirmed, the whole rhythmus of the inner life of man (*Andacht oder Tanz*). Heine even predicted that it will be "the last word of art." Stuart Mill, in his Autobiography, laments the approach of the time when all the possible permutations and combinations of musical sounds shall have been exhausted. In the chaos consequent upon the World War, music has clearly outpaced poetry, painting and sculpture in public interest and estimation. Where Walt Whitman or Vachel Lindsay had a moderate show of success in reading or reciting their own poems, people flock to endless concerts in vast numbers, and with an interest seldom apparent at an exhibit at an art gallery. Even the cacophonies of cubistic music are endured with the exemplary patience of dumb, driven cattle or the "sad civility" of lambs led to the slaughter pen. In New York City alone, the weekly output of public concerts occupies several columns in the Sunday newspapers. Radio has made the better sort of music a household word. The "canned music" obtainable by gramophone records is now approaching a high degree of permanent excellence and value. And in all

this, the composer has the distinct advantage. Beethoven projects himself into futurity by means of a crabbed, well-nigh illegible MS. score, say of a string quartet. Innumerable interpretations are possible. Nothing is of consequence unless the performance throws into relief the uncanny genius and *grandeur d'âme* of Beethoven, conveyed primarily on impersonal printed scores, now over a hundred years old.

The reading or delivery of medical lectures and papers might be defined as the virtuoso phase of the science and art of medicine. The impersonal, strictly scientific paper may be as dull or as dry as an official report or laboratory protocol; intelligible to a few experts only. No one cares, provided the findings and conclusions be accurate, well-considered and not too tedious in the reading or audition. When such a paper records a distinct advance, a worthwhile discovery or invention, it becomes a small event in the history of medicine. That the portentous length of sundry medical papers bears a distinct relation to the high cost of medical periodicals is now a commonplace. That no specialist can keep up with the present proliferation of current literature on his subject is equally self-evident. The vast majority of current papers are in the nature of fertilizing media, "ploughed into the soil for compost," as Thoreau put it, and with "a good deal of guano in their destiny." Such slogans as "fewer and better periodicals" or "say it yesterday" are set off by the expansion of medicine in newer national groups or far distant countries. In consequence of the financial depression, there is no medical library in the world which can now afford to subscribe to more than a respectable fraction of current medical periodicals. The bane of recent medical literature is prolixity.

In the case of the innumerable papers read at medical gatherings, we have another matter. A recent observer classifies people, according to their perceptive powers, as visual beings (*Augenmenschen*), who apprehend by the eye; auditory beings (*Ohrenmenschen*), who learn by listening; and the general run of normal, well-set-up people

(*Muskelmenschen*), who acquire knowledge with effort, by grappling with it. There are experts who can estimate the positive value of a lengthy, complex scientific paper, as experienced readers take in the content of a prolix novel, by turning over the pages. In the case of lengthy abstruse communications of unfamiliar material, most of us have to "muscle-in." A test of visual capacity, favored by some European teachers of Latin, is to read a page or paragraph, close the book and state the content off-hand, in one's own language. A test of auditory capacity is what we actually grasp or retain of a lecture or a series of papers read at a medical meeting. As in Diderot's "Paradox on Acting," this turns as much upon the literary capacity, personal magnetism, elocution and expressive power of the lecturer as upon his auditors. As the mind wanders instinctively from a dry, dull page, so "cheerfulness, creeping in" is apt to distract attention from a boresome lecture, just as congregations gave themselves up to their own reflections during the stupefying sermons of the 18th century.

All this has important bearings upon the methods of teaching medical history introduced by Professor Sigerist in the Johns Hopkins Medical School, which constitute a new departure in this country. Heretofore, the subject had been taught by lectures alone. Chairs existed, with men of parts as incumbents, whose lectures were carefully prepared, usually from second or third-hand sources. The results were nearly always lamentable. The students, already overburdened with other courses, were bored and repelled by the dull quality of sentences intended for the eye alone, and by the unfamiliar names which Coleridge declared to be "non-conductors, stopping all interest."

There was apt to be an ominous shuffling of feet; students drifted away in groups as the lectures proceed apace; and, in some cases, the lecturer found himself, like the proponent of matrimony, addressing an audience of one. Even Billings' Johns Hopkins lectures of 1877-8, fashioned upon the old Daremberg plan (medicine as a succession of outworn theories) were in the nature of a "success of esteem" and were never published. In the case of some

visiting lecturers, President Gilman shrewdly resorted to the Chinese box plan of a succession of rooms adapted to audiences of decreasing size. Sigerist gets around this difficulty by carefully adjusting his material to the capacity and interest of freshmen, who are now much better educated than formerly; and by deploying the short, colloquial "chipped flint" sentence of Victor Hugo, Charles Reade and Emerson, which penetrates the ear. The subject is handled extempore, along broad lines, limited to essential phases only and illustrated by a minimum of lantern slides. Lectures to pre-medical students at Homewood (Dr. Oliver) utilize the historic approach to orient the prospective physician as to the responsibilities and pitfalls of his future career. But lectures will never carry the premedical or the freshman student very far in this subject. He is therefore brought into the seminary, where he participates in a general *viva voce* discussion of some theme, briefly exploited by the professor. In the seminary for advanced students, the professor activates, the students do the lecturing, as at the Harvard Law School; or prepare a collective wallside and glass case exhibit, illustrating the history of some such basic discipline as anatomy, pathology or pharmacology. There is nothing particularly new about the seminary method, which is employed in advanced courses of all going universities and was started long ago, in the workshops and training ships of the Naval Academy ("In the Navy, you don't learn how to do things; you go out and do them"). It was implicit in the programs of the medical history clubs and in Osler's plan of buttonholing the students in clinic to report on special topics at his home. Even urchins in the public schools of Washington were encouraged to gain confidence in themselves by describing their vacation experiences in their own language. But it is to Sigerist's lasting credit that, in two years' time, he has made the medico-historical seminary a going concern in this country. Ten years of experience at the Leipzig Institute have convinced him of the futility of burdening students or public audiences with more than essential data. A long succession of lantern slides, for instance, is apt to

confuse visual and auditory perception, particularly when the lecturer turns about to demonstrate his slides and cannot be heard. The aim is nowise "every man his own medical historian"; but to give the embryo physician a contact with the *humaniora,* which may be a permanent cultural asset or a sheet-anchor against boredom during the rest of his professional life. The germ implanted may enable the recipient to carry on in the same way with prospective pupils in the discipline or specialty he may be destined to teach. In keeping with the tenets of Diderot's famous paradox, a successful lecturer on a serious, scientific subject must never be mastered by his material, just as the real actor or virtuoso of music is never affected by the emotions he conveys. Disdaining meretricious, melodramatic devices or other vulgar gallery play, he must nevertheless have such unquestioned control of his material that he can deliver it from rough notes extempore, on short notice, even to the extent of adapting it, expanding it, compressing it or even curtailing it, to suit the needs of his particular audience. With the *coup d'œil* of an experienced general on an unknown battle-front, he must "respect his adversary" with a single eye to winning victories; in other words, so dramatize himself and his subject with reference to his auditors that he reaches them effectively and without effort. If he lectures above or below the capacity of his audience, he is lost. If he bores them, he is voted a "bromide," a "false alarm" or a "flat tire." Virtuosity of this kind is as rare among scientific men as it is among generals. There is still pith and pungency in Sir James Barrie's witticism, that the scientific man is the only being in the modern world who has something new to say and who does not know how to say it. Apart from specific talent or magnetism in the lecturer, the days of the didactic lecture seem numbered.

Advanced research work, fitting the student to be an independent investigator or potential teacher of medical history, usually takes the form of some special monograph, developing new knowledge, new viewpoints, new alignments, at the expense of the older stereotyped interpreta-

tions. The watchword is investigation at the basic sources. Work of this kind connotes special knowledge of ancient or archaic languages, comparative philology, palæography, European history and foreign literature, which is rare among medical students. In the Baltimore Institute to date, such *Arbeiten* have come mainly from students working for the degree of doctor of philosophy in the University proper, at Homewood. Apart from Professor Sigerist himself, the staff of the Institute numbers three learned Grecians, who are also accomplished Hippocratic scholars. Dr. Oliver has edited and translated the Prorrhetics. Dr. Temkin is working on a complete revision of the status of epilepsy in the Canon and has traced the fortunes of Hippocratic lore from the time of Galen to the Arabic period. Dr. Ludwig Edelstein, who joins the Institute in September, is not a physician but a classical philologist, probably the ablest living investigator of Greek medicine of continental Europe. His exegesis of the Hippocratic tract on Airs, Waters and Places and his picture of the workaday status of Greek medical practice in the early period have excited controversy and are, to some extent, revolutionary. Dr. Sigerist himself is preparing an exhaustive collation and revision of the Latin medical texts of the Dark Ages. In the seminary, advanced students are brought into direct contact with the progress of these researches in ancient medicine. Of immediate practical interest, as concerning their prospective professional welfare, is the seminary on the social medicine of the future, in such large areas as the United States, Russia and China. Here the discussion of the conflict between social medicine and the old order of things is taken up by the students with lively interest. Dr. Sigerist's survey of American medicine, the fruit of two years' travel and experience, will be followed by similar studies of Russian and Chinese medicine *in situ*.

To appraise the prospective value of these new departures, it is worthwhile to review the development of medical history in our country during the last three centuries. Beginning with Thacher's broadside of 1677, the colonial pamphlets on smallpox are in the nature of raw material.

The records of epidemic yellow fever by Carey, Currie, Rush and Lining (1793-99) are more to the historian's purpose. The Philadelphian epidemic of 1793 is well described in *Arthur Mervyn* (1799) by Charles Brockden Brown, the ablest American novelist of his period. In 1769, Peter Middleton published the first American book on medical history, a contribution which seems as respectable as most of the mediocre 18th century output. There is then long silence in the records until the appearance of James Thacher's American Medical Biography (1828). Nor is there anything else of consequence until 1876, unless we include Daniel Drake's volumes on the diseases of the Mississippi Valley (1850-55). Around the Centennial Year cluster such things as W. W. Keen's History of practical anatomy (1876), Toner's surveys of medicine in the Revolutionary Period (1874-6), "A Century of American Medicine" (1876), "A Century of Public Hygiene in America" (1876), the pamphlets of Billings and Gross on American medical literature (1876), and Gross on American surgery (1876). About 1842, Dr. O. W. Holmes began to publish those "Medical Essays," assembled in 1883, which make up the most important literary contribution of the period, the work of a physician, who was also a professional man of letters. A wit and humorist of the best American type, Dr. Holmes was no "piker." He knew his old authors well even if he did not parade them. He defined the wind-bag medical orations of his time as expectorations. Some of his best things are buried in the files of periodicals and deserve resurrection. His most original contribution is his portrait-gallery of the old Paris Medical Faculty, drawn entirely from his own experience and, in consequence, more often cited than most. In his period came the Index Medicus (1879), the Index Catalogue (1880), Billings' London address on medical literature (1881), J. C. Dalton on experimentation in medicine (1882), Engelmann's outstanding study of primitive obstetrics (1882) and J. J. Fort on Medical Economy in the Middle Ages (1883). About the last decade of the 19th century, there was another significant upthrust. In 1889 came H. E.

Handerson's translation of Baas (1876) and the organization of the Medical History Club of the Johns Hopkins Hospital, which turned out a long row of worthwhile contributions. Among the "high spots" of this period are the contributions of Osler, Jacobi and Robert Fletcher, Weir Mitchell's study on instrumental precision in medicine (1892), Alice Walton on the Cult of Asklepios (1894) and Billings' history of surgery (1895). The first series of the Index Catalogue (completed 1895) affords an almost complete lay-out of the older medical literature and became a permanent source for reference work. The period between the Spanish American War and the World War was one of new departures. The work of Sudhoff began to loom large and introduced novel criteria, viz., to challenge every accepted statement of fact, to verify at the source, to regard the history of a science as equivalent to the total fabric of the science itself (Goethe) and to mobilize thereto the data of anthropology, prehistory, numismatics, epigraphy and the rest of cultural history. The older text books of Daremberg, Haeser and Baas gave place to those of Withington, Neuburger, Pagel-Sudhoff and others who followed the newer trends. With the foundation of Sudhoff's chair and Institute at Leipzig (1909), medical history became a funded item in the university curriculum, where Haeser and Pagel had worked and taught without a budget. Sudhoff's *Archiv* (1910) sounded a clarion call, "To work, with pick and spade" and became a repository for serious, solid performance, as against amateurish bids for coin and *kudos*. In the United States, this was the period of the local medical history clubs. Doctors who had barely a bowing acquaintance with Hippocrates, Galen, Celsus or Paracelsus, began to turn out facile improvisations, cribbed as a rule from second-hand or second rate sources, and with a bogus assumption of omniscience as to the total range of medical history. Even in European centres, Sudhoff noted an occasional tendency to "throw out the chest" as an index of shallow qualifications. An ephemeral contribution to medical history came to be regarded as a convenient short cut to a permanent reputation not otherwise obtainable, as

if the subject itself were of immortal essence. But no great harm was done, since the general law of the medical history club was to shed assumption and maintain the attitude of the modest, willing learner. Osler once said to the present writer that as ambition is proportional to capacity, so serious accomplishment in this field would be conditioned by the selfless humility of the *bona fide* worker in science in facing a difficult problem. At the beginning of the 20th century, Packard turned out a history of colonial American medicine, based upon authentic research work. The subsequent period was one of general stimulation of interest and here the medical history clubs of Baltimore, Chicago, New York, Philadelphia and Boston distinguished themselves as activators of medical culture. Developments in the lake-shore and Pacific states were spontaneous, substantial and independent of Eastern or European contacts. The period preceding our entry into the World War was chaotic. In the twinkling of an eye, Europe became a congeries of armed camps and even poets, scientists and philosophers blossomed out *ex abrupto* as activators of hysteriform hate. The "Hymn of Hate for England" was set off by "A Song of Love for England," from an American lady. Germany was slapped upon the wrists by serious men of science, who affirmed that her scientific abilities and achievement were *nil*. We need not the satiric observations of M. André Siegfried to remind us that our own country, welded into organic unity by the Civil War and committed to the Washington-Monroe policy of independence of and detachment from other nations, was suddenly transformed into a noisy museum of ethnology, with the catch-word, "Find the American." Impersonal officials of the government were pestered to extinction by the obstreperous behavior of self-appointed antagonists and protagonists of warring races and nations. Espionage and hounding of commonplace, inoffensive people became, and still is, a monomania. Under such conditions, pursuit of medical history became of dwindling consequence, albeit sometimes made occasion for senseless racketeering. Throughout the whole insane welter, the Annals of Medical History (New York) served

as a neutral repository for contributions, irrespective of racial or national prejudice and the tendency of the historical to become hysterical.

The period following the great tragedy was one of war-weariness. Compelled to expend their total energies upon peripheral conflict at the expense of internal economy, the warring nations found themselves bankrupt. Prolonged wars of such dimensions bring in their train "red ruin and the breaking up of laws," an upheaval of existing social order and a total degradation of human dignity; as revolutions, even of honest intention, are apt to bring "the rats out of the cellar." The magnificent civilization of the 19th century Europe was smashed utterly. The greater classics of literature and music, which had inspired our youth, seemed insipid and, for a long time, came "uncouthly to the palate." American civilization was developed by "strong men with empires in their brains," set off by a few little seed-plots of cultivated people here and there, but the religious, ethical, social and æsthetic outlook of the great mass of the people was often limited, childish, small-town and provincial. The draft had revealed an unsuspected substratum of adults with undeveloped minds. To sustain sanity and morale in the trenches, it was necessary to keep cheery by the device of the prison-camps: *Il faut s'amuser.* A post-bellum generation arose, characterized by puerile mentality and childish personal traits. The play-boy, trivial, irresponsible, volatile and unreliable as a butterfly, was a wartime product, by no means confined to the United States. Reversion to the primitive and primordial in the fine arts (cubism, atonal music) was an expression of the fact that life itself had become aimless and meaningless. Composers became decomposers. The interest of Joyce's Ulysses is that it decomposes literary expression into its basic, primordial elements. The biographer became a valet to his hero, concerned with backstairs gossip and the seamy side of genius. The older school, who saw great men as moulded of their faults, were denounced as venerators of stuffed shirts, plaster saints and idols with feet of clay. The deterioration in quantity and quality of medical litera-

ture alone may be sensed by handling the volumes of the Index Medicus for 1913 and 1917-18. Its subsequent senseless proliferation is apparent in the volume for 1926. Nevertheless, the serious-minded remnant of cultivated Europeans maintained their culture in the face of extreme privation; and medico-historical research of high quality continued apace; to be reflected *longo intervallo* in such American productions as Cushing's Osler, Moodie's Palaeopathology, or Fulton's history of muscular contraction. A swarm of books on the general history of medicine appeared on both sides of the water, some in coarse vernacular or even doggerel. A feature of the playboyishness of the post-bellum period was the "smart Aleck" school of writers and the appearance of the medico-historical jokesmith, whose labored burlesques were concocted after the patronizing device: *Du sollst und wirst lachen.* The "humor" of these effusions was trite, forced, *gesucht komisch,* lacking in the essential element of surprise, in brief, as dismal and repelling as Blumauer's burlesque Æneid or a comic life of Christ. Here and there, medical history came to be exploited as a racket, to promote business enterprises or to advertise commercial products. Prime movers of medical education in the country were fain to regard the subject as a dilettante recreation of piffling importance, unworthy of an university chair. Sudhoff fulminated vainly about degrading the august Clio "to the level of the street-walker." "Medicine," he wrote, "is a sacred calling, and he who makes it ridiculous is guilty of sacrilege." Well-meaning enthusiasts, now and then, got up innocuous pageants, in the shape of a processional of medical heroes, beginning with the shadowy figure of Hippocrates. About this figure, we may linger for a moment to stress a point. Readers of the Jones-Withington bilingual, will recall the view of Wilamovitz that Hippocrates is essentially "a name without writings." All we know is that a leading physician and medical teacher of the name existed in the 5th century B. C. and was probably born on the island of Cos. Even the latter ascription is challengeable in the light of excavations, which go to show that the Æscula-

pian cult became associated with Cos *after* the presumable death of Hippocrates. Nevertheless, the cult may have been established there in his honor *post mortem* and along with it the library or collection of scriptures known as the Hippocratic Canon. Each of these writings now "dates," in the sense of being roughly assignable to some period before, during or after the estimated life-span of Hippocrates. In the second and third groups are certain incomparable texts, which are either the product of some great mind or of a school of thought inspired and activated by such a mind. If we agree to designate the vague authorship of these Coan texts as *X*, then it is convenient to equate *X* with Hippocrates, whom Alexandrian tradition placed *primus inter pares* with Praxagoras and Chrysippus as an authority on Dietetics. The gradual deification of Hippocrates, as *Heros Iatros*, by the Alexandrians, by Celsus and by Galen, up to the time when Hippocrates supplanted Galen himself, has been elucidated by Edelstein. This heroizing or canonizing process has been continuous, from the legendary transfiguration of Asklepias by Zeus, to date[1]. Could we now recede backwards in time, upon a ray of light, and grasp the true inwardness of the Hippocratic mystery at the source, we should probably find something utterly different from the conjectures of the romantic school or the realistic school. A large segment of Greek medical literature is as irrecoverable as the lost tragedies of Æschylus. The earliest known Hippocratic MSS. were copies made some fifteen centuries after the Hippocratic period. Classical philologists, nevertheless, have drawn illuminating conclusions from detective work on these fragmentary remains, and not entirely as *le pain des professeurs*. In such work, the location of the ugly little fact destined to slaughter a beautiful hypothesis may be likened to the study of a spirochætal organism under the microscope.

Around the periphery of the eyepiece, an infinite number of futile viewpoints may be possible; but visibility is largely a matter of focussing. Even so the creature may be so

[1] For exposition, see: H. E. Sigerist: On Hippocrates. *Bull. Inst. Hist. Med.*, Baltimore, 1934, II, 190-214.

elusive in its shiftings and windings that only an approximate notion of its actual shape and size is possible. At the farewell banquet tendered President Woodward, on his retirement from the Carnegie Institution of Washington, there was a clever burlesque of the all-too-human tendency to distort the significance of historic occurrences to suit the whims and personal equation of the historian. No two witnesses can describe an exciting occurrence, let alone a tedious, lengthy episode, alike. After the World War, the General Staff of the Army required that every declarative statement of fact in a historic narrative be verified by documentation. The medical historian is on delicate ground directly he deserts the simple military rule: Facts, not opinions, are wanted. In the matter of opinion, one might alter the witticism of Philip Guedalla: As history repeats itself, medical historians are apt to repeat one another. One of the leading medical thinkers of England, upon hearing the net result of original investigation in medical history during the last 35 years, turned sadly away with the remark: "In view of the abyss into which present-day Europe seems sliding and the duty of getting sick people well, it surely does not amount to much." The medicine of the future is by way of being profoundly affected by social and economic change and it is probably more rewarding to visualize the significance and mass-action of such movements than to fumble over insignificant details in the lives of men. Our knowledge of the life-histories of ancient Greek physicians is in what the mathematician Boltzmann called "a highly improbable state." What will be known of the most prominent figures of our own time, a few hundred years from now, is even more dubious. Nevertheless, accurate verification of existing facts and dates at the source is one of the most important functions of medico-historical investigation. Rowntree made a complete revision and expansion of the meagre details in the life of Parkinson by going over the records in London. Whether the history of medicine should be pursued as a branch of dry science or as an all-embracing phase of the general history of culture is a large open question. The known criteria of a scientific

proof should undoubtedly be applied to the specific problem and in a spirit as austere, impartial and impersonal as that obtaining in a physical or chemical investigation. But the general subject touches human life on every side and every case the doctor handles is, first of all, a human and humanistic problem. The art or bedside practice of medicine, which in Edelstein's reading, was naught but a mechanical, rule-of-thumb craft (*techne*) among the peripatetic physicians of ancient Greece, is, in every respect, a fine art, bound up with ever-increasing experience of human nature. This is the permanent ideal of the medical profession, that the natural born bedside doctor makes his knowledge out of his own experience, with some reliance on books. Not so long ago, the view obtained that medicine may be merged into chemistry or physics or, as Virchow opined, be absorbed in the general body of common knowledge and vanish as such, like Huneker's orchestra disappearing into the fourth dimension of space. But there are no immediate signs of either phenomenon. The view of Sarton that the history of medicine is to be envisaged and treated as a subsidiary phase of the history of science is the view of an essential mathematician. The doctor's rôle in the matter will never be understood in this way. That the observational methods of clinical and biological investigation are implicit in the Hippocratic scriptures was recognized by observers so different as Aristotle and Helmholtz. Apart from the mathematics, Greek medicine, in the older view, was the foster-mother of European science. The glory of Greek medicine is irradiated in the sentence of Plato: "He shall be as a god to me who can rightly discriminate and define." Come what may, the formative period of activation, stimulation and proclamation is by, the movement for substantial research is forward, and, with this objective, the little barque of medical history must take its chances upon a stormy sea of sinister currents and cross-currents, concerned with no less than the hatching of wars and revolutions, the undermining and overthrow of governments, the enslavement of peoples and the disruption of any honest social order whatever.

F. H. GARRISON.

THE CAUSES AND PREVENTION OF BLINDNESS*

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We are gathered together this evening to do honor to the memory of Hermann M. Biggs, a leader of men, a dreamer of dreams, a skillful administrator and a competent authority to whom his associates looked for inspiration and guidance. Biggs was endowed with unusual executive ability. He expended his energies in acquiring special knowledge, which he immediately applied to the advancement of public health. It is a privilege and an honor to take part in perpetuating the name of one who did so much for the commonwealth.

The causes of blindness, partial or complete, are numerous and vary so much as to the time of life when they become manifest, the severity of effect and amenability to treatment, that a comprehensive survey should be made before their prevention can be adequately discussed.

Inherent in the genes of male and female are certain unmeasured potentialities, which may be expressed in abnormalities during intra-uterine growth or at any other time during the life of the individual, and although some of these may be altered by environment, conditioned reflexes, a great many are fixed and constant.

The prenatal stigmata include those which result from the lack of normal development, such as an arrest in the fusion of the ocular cleft or the imperfect growth from the anlage resulting in monsters. The investigation of these anomalies offers an excellent field for medical research. The eugenic societies, as soon as their field expands and their recorded observations become more numerous, will, I am sure, give added attention to these defects.

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* *Hermann Michael Biggs Memorial Lecture, delivered at The New York Academy of Medicine,* May 3, 1934.

Among the manifold problems in the prevention of blindness, those arising in the practice of obstetrics play a striking part. Just at this time the natal conditions are the subject of much acrimonious discussion. Some commissions, I fear, expect the most perfect surroundings for all births and the most expert special treatment. This is Utopian. We approve of any attempt to better the obstetrical care of the women of the United States for our maternal mortality rate is high.

Pregnancy, although biologically a desirable and necessary condition, is nevertheless one which produces a marked change in the maternal organism. Most women carry the child and are delivered normally without any detrimental systemic changes. There are, however, an increasing number of pregnant women who show evidence of toxemia, the earliest signs of which are found in the fundus of the eyes as spasms of the retinal arteries. The irregular narrowing of the lumen of the minute retinal vessels is proof of impending disaster. Comparatively few physicians realize the importance of this premonitory sign. All obstetricians agree that undiscovered or untreated toxemia of pregnancy is a serious condition. Ophthalmologists know the value of frequent ophthalmoscopic examinations whenever visual disturbances are reported. If the early signs of vessel spasm are not recognized and if the appropriate treatment is not promptly instituted, the contraction becomes fixed and the patient never recovers from the damage to her retina and general circulatory system, for when the high blood pressure of toxemia becomes established it resists all medication. The recognition of the eye changes is imperative if the vision is to be preserved and life prolonged. Because patients often fail to observe or to report symptoms of ocular discomfort, the physician should always inquire regarding these possible complications.

It is well to realize that the sight may be permanently lost or seriously impaired as a result of an abortion, when a minute clot is dislodged from its primary location in the uterus and lodges in the central artery of the retina.

Many babies become blind through an infection of the lining membrane of the eyelids acquired during passage through the birth canal. This is the direct consequence of organisms growing on the conjunctiva, producing a fulminating inflammation with extreme swelling and redness of the eyelids. At the onset there is a watery discharge from the eyes which is soon followed by a profuse purulent flow. It should be clearly understood that the inflammation of the eyes of the newborn is by no means always of venereal origin but may be and often is the result of other pus producing cocci and bacilli.

The birth of the baby may be retarded by mechanical or other forces so that operations become necessary. The delivery by forceps may cause serious damage to the eye when the blades compress the eyeball and stretch or rupture the cornea. The instrument may also dislocate the eye or even produce sufficient traction to interfere with the function of the optic nerve.

Intraocular hemorrhage in the newborn is found after normal delivery, after the use of forceps or after a Cesarean section; so that it should not be ascribed to the trauma of birth. The after effects of such hemorrhages are the subject of many investigations. An opinion was recently expressed that they may be the cause of some scars in the retina and choroid which have never been clearly understood.

An infrequent but terrible cause of blindness is xerophthalmia induced by the lack of essential food elements. This becomes evident shortly after the birth of a seemingly normal infant. The cornea literally melts away and in a few days the patient is hopelessly and incurably blind.

If the baby has passed through the dangers attendant upon his birth, it may be found that his eyes are not perfectly developed and that some congenital defect will handicap him for life. He may be without eyes, or the eyeball may be too small, or too large. The globe may be elongated producing extreme short-sightedness with stretching of the retina and choroid and traction on the optic nerve; or it

may be too short with an extreme degree of far-sightedness; or the eyes may turn far in, out, up or down.

Some parts of the eye which normally disappear before birth may remain as a pupillary membrane or a patent Cloquet's canal. Occasionally, extremely large blood vessels, angiomas, destroy sight.

If the infant is fortunate enough to have no congenital malformation, he may have an inherited constitutional disease which proves to be most destructive in its effect upon his eyes. Syphilis is the activator in most of these tragedies. In specific interstitial keratitis, the child complains of photophobia and soon enters the stage of unilateral or bilateral vascularization and infiltration of the cornea. After several months of treatment, the cornea may become clear and vision be restored. Many patients are not so fortunate, the cornea remains hazy and the sight so poor that they are unable to care for themselves and become public charges or burdens to their families.

Some cases of congenital syphilis are diagnosed when a bilateral swelling of the knees precedes a red eye, at or shortly after puberty.

Congenital optic atrophy may be produced by syphilis. An unique disruption of function is called hereditary optic atrophy. This clinical entity is seemingly an abiotrophy with familial traits. In a recent report, I presented a family tree of five generations in which several members lost most of their sight a few weeks after a sudden reduction in vision. The individual episode was unaccompanied by any pain or redness and was without any general or local signs of trouble.

The line between the congenital and the acquired eye diseases cannot be clearly drawn. A cataract is an opacity of the lens or its capsule. The congenital cataract is usually of the lamellar type showing as a grayness of the pupillary area. This may be sufficiently dense to attract attention at birth or it may not be noticed until the child is many

months old. Therefore, we have families in whom cataracts are congenital, others where they develop in early childhood and many in whom they are the trial of advanced years. There is no question but that the tendency to cataract is inherited. Laboratory experiments and clinical experience supply abundant proof of this assertion.

Whenever you think of a cataract always have an exact understanding of what is meant by the term and especially what part of the lens is involved. By use of the slitlamp, a combination microscope and narrow beam of intense light, we are able to tell how old the patient was when the cataract developed. It is also possible to determine whether the cataract is stationary or progressive and if the latter how rapidly it will advance. In addition to this information so vital to the ocular life of the patient, we can decide whether the cataract is the direct result of a known agent or secondary to an intraocular disease. Numerous clinical facts must be searched for and appraised in the study of a cataract.

The subject of cataract is, therefore, of engaging interest. It has lately been determined that opacities in the lens may form as a result of the hypersecretion of some of those mysterious bodies called glands of internal secretion and that the hyposecretion of others, such as the thyroid, parathyroid and pancreas may produce somewhat similar changes. It seems fair to state that with the exception of a rare type, which appears in children suffering from diabetes, that the most universal cause of acquired cataract is age, and by age I do not mean chronological but physiological senility. Everyone should know that if he lives long enough he will have some opacity in the lens, but it must be repeatedly stressed that the mere appearance of a lens cloud is not sufficient reason to tell the patient that he has a cataract for it may never interfere with sight. If he has to be told, then time should be taken to explain his exact physical condition and the manner in which it will influence his future life. Bear this in mind when we discuss preventive measures.

There is evidence that hardening of the eyeball, glaucoma, can be definitely traced through families, and I believe it is conceded by the most competent internists that high blood pressure, kidney disease, arteriosclerosis and diabetes have their inherited types. Ophthalmologists believe that the tendency to cataract, glaucoma, extreme degree of myopia, strabismus and certain degenerations in the macular retina are inherited.

On the other hand, sufficient testimony has been offered to uphold the contention that glaucoma may be acquired for isolated cases are found in families in whom no previous one has appeared. The exigencies of modern life, worries, anxieties, lack of the necessary mental equilibrium to adjust oneself to the rush of the times, all seem to have an influence in initiating an attack of glaucoma. Much time could be devoted to this subject which is of vital interest to everyone for no race is exempt, no person immune and all are susceptible whether male or female, far-sighted or near-sighted, those with high or low blood pressure, with or without arteriosclerosis, a celibate or a roué.

Two definite types of glaucoma are recognizable, one is often ushered in by an attack of nausea and vomiting, an acute gastrointestinal upset. The eyeball is darkly congested and the pupil dilated with rapid, serious obscuration of vision. This may have been preceded by times of partial fogging or dimness of vision or even premonitory periods of transitory blindness.

The other type is one of the most serious of all eye diseases because of its insidious onset with lack of redness and absence of nature's signal of alarm, pain. It may destroy sight or greatly constrict the field of vision before its presence is suspected. Few eye conditions call for more discriminating, diagnostic acumen than the early recognition of this common destroyer of the sight of the mature and aged. I cannot refrain from expressing the admonition that glaucoma of this type can only be diagnosed by ophthalmoscopic, field and intraocular tension studies. The last portion of sight to be destroyed is central vision. Fre-

quently the patient is unconscious of the slow, continuous degeneration until something makes him cover one eye and then he discovers his poor sight. Thousands and thousands of people are suffering from this disease, which although most frequently manifest after forty, may be present at any age.

Our manner of living tends by the very nature of our existence to demand the expenditure of more and more physical and mental energy. If a person who is unable to adjust himself to conditions marries and has a family some of his descendants may give evidence of this lack of stamina by early degenerative changes.

A comprehensive study of those who die of hypertension seems to substantiate this belief as each succeeding generation dies earlier than the preceding one. There is an apparent increase in the cardio-vascular-renal diseases and many patients go blind from embolism, a sudden closure of a retinal artery, thrombosis, a rapid occlusion of a retinal vein or retinal hemorrhage. The number of patients suffering from hemorrhages inside of the eye is alarming.

Even when these red flags of blood are prominently displayed, many fail to, or cannot, heed the warning and as a consequence die from a cerebral hemorrhage, which might have been postponed for years.

A class of diseases which is on the border line between the congenital and the acquired includes a curious degeneration of the retina, retinitis pigmentosa, the easily recognized symptom of which is night blindness. This is not only inherited but it also develops in those undernourished as after periods of prolonged fasting. The rare angiomatosis retinae, a disorder of eye and body characterized by the formation of angiomas and cysts is probably also familial, as is corneal dystrophy and keratoconus where the sight is so reduced as to constitute veritable blindness.

The list of inherited possibilities is lengthy but when compared with those that are acquired it is really very short.

Focal infections, syphilis and tuberculosis hold the attention of all interested in the most prolific sources of blindness.

A focal infection is a localized area of disease which may produce remote systemic effects. In the eyes it may initiate an iritis, a choroiditis or a retinitis with secondary optic atrophy ending in blindness. The teeth, tonsils, nasal sinuses, intestinal tract and the genito-urinary organs may be the site of the original trouble from which the toxins are absorbed.

Syphilis may destroy sight by its action on the blood vessels as in choroiditis or by direct effect upon the nervous system as in locomotor ataxia or general paralysis.

Tuberculosis may involve any part of the eye and is a prevalent disease, frequently encountered in seemingly healthy young adults. Often it demands the most searching investigations to uncover its presence for the vast majority of ocular tuberculosis is unassociated with pulmonary invasion. The cornea may be involved in the form of interstitial keratitis, the iris in an intractable inflammation, the retina and choroid in a destructive process with single or multiple lesions or there may be recurring intraocular hemorrhages.

In the light of our present knowledge a phlyctenule is an allergic reaction of tuberculosis. When the cornea is the site of the lesion, the dread of light is extreme. Repeated attacks so cloud the cornea as to materially reduce vision, not only directly by the scar, but also indirectly by leading to the development of near-sightedness. The differential diagnosis between syphilis and tuberculosis of the eye is sometimes very difficult. The decrease in the number of people suffering from active or open tuberculous lesions is worthy of note. Perhaps the chronic forms are, therefore, more apparent.

In this country leprosy is too rare to need consideration in this address.

The infectious diseases of childhood have for the time lost much of their virulence. Diphtheria is readily controlled by antitoxin, small-pox prevented by vaccination and when scarlet fever is responsible for the eye trouble, it is because of kidney complications. There is a possibility that an attack of mumps may induce an optic atrophy. Because conjunctivitis is one of the early symptoms of measles, its importance as an agent capable of impairing vision has been over-emphasized. I have never known blindness to result from measles.

Trachoma is still an active agent in producing poor vision and in destroying sight. All physicians understand the clinical course of red eyes, discharge, photophobia, corneal ulcers, corneal scars and distorted lids. In some sections of this country trachoma constitutes a serious health menace.

The chemicals of industry are potent factors in reducing vision by damaging the optic nerve although they rarely produce total blindness. They include lead and some of the carbon compounds such as the tetrachlorid used in cleaners' and dyers' establishments and disulphid. The excessive indulgence in alcohol and tobacco by the susceptible may terminate in imperfect vision.

Quinine taken in large doses especially as an abortifacient has permanently destroyed the function of the optic nerves.

There are several blood states such as pernicious anemia and leukemia during the course of which retinal hemorrhages and infiltrations of the retina may injure or extinguish sight. Unusually rare incitants like certain skin diseases, lipoid deposits and lack of the essential mineral elements such as calcium and phosphorus may also damage vision.

Degeneration of the macula is a common condition produced by the closure of the blood vessels supplying nourishment to that sensitive part of the retina. The patient loses central vision but does not go blind from the disease. The

appreciation of this fact has proven of immense comfort to the aged sufferers, many of whom have looked forward to advanced life as a time for concentrated reading and who when deprived of this long anticipated pleasure are terribly worried and fear complete blindness.

Detachment of the retina, usually a sudden separation of the retina from its choroid base, may follow an accident or develop in a seemingly healthy eye although it occurs much more often in a near-sighted one. The patient sees only part of an object and the eye remains unchanged in outward appearance. Only a skillful physician can distinguish the different kinds of retinal detachment. One form is coincident with the expansion of an intraocular tumor, but, fortunately, most detachments are not caused by such a calamitous condition.

There are three forms of malignant disease which attack the inside of the eye. The one we have just mentioned is sarcoma of the choroid, found most frequently in adult life. The earliest stage can only be detected in the course of a routine ophthalmoscopic examination when a small elevated mass can be perceived. The second stage is manifested by a defect in the field of vision. The patient becomes conscious of a haze or cloud which partially obscures his sight. Obviously this loss is more quickly recognized if the growth is in or near the center of vision. The third stage is characterized by an intense redness of the eyeball, marked decrease in vision and excruciating pain. The fourth, or terminal stage, is that in which the tumor penetrates the eyeball and appears between the eyelids or if it has extended into the orbit, pushes the globe forward. At this time, there is usually a metastasis somewhere in the body and the prognosis for life is hopeless.

The second intraocular growth occurs only in children and is called glioma of the retina. Here again the first signs are ophthalmoscopic but as the tumor increases there is a curious almost pathognomonic yellowish glare from the pupil. If not correctly diagnosed and treated at this stage, the mass continues to enlarge both anteriorly and poster-

iorly. If the backward extension is the more rapid, there is involvement of the brain with secondary meningeal symptoms followed by death. If the progress is forward, a large bleeding mass fills the orbit, involves the cheek and the patient finally dies from inanition.

The third form is carcinoma. This is not only rare but its progress is capricious and its extensions more bizarre than either of the other two.

Although the eyes are protected by the overhanging bony orbital ridges, the eyelids and the eyelashes, many are injured. The largest number of accidents are caused by flying particles such as emery, iron specks, steel chips, pieces of copper, splinters of wood, cinders, glass or brass. These frequently lodge in the cornea and if they become infected or if they are unskillfully removed a corneal ulcer may develop with secondary loss of vision. If a foreign body inside of the eyeball is not removed, there is grave risk of sympathetic ophthalmia. This is a very strange condition in which the eye that was not injured becomes affected and the process terminates in partial or total blindness.

In our present complex life the eyes are exposed to chemical burns from battery fluids, lime, corrosive acids, ammonia fumes, sulphur dioxid, and tear gas. Many hunters, policemen, state troopers and innocent on-lookers are injured by explosive fire-arms and air-gun shots. Many eyes have been severely damaged and some destroyed when struck by tennis or golf balls.

The eyes of hundreds of children have been lost after an injury by toy arrows, spears and sharp sticks, by scissors used to untie a refractory knot in a shoelace, by whittling with a jack-knife drawn toward the face and in many other accidents. Automobile casualties are responsible for many blind eyes as a result of fracture of the skull, laceration of the eyeball or even evisceration.

Any penetrating wound of the eye may produce a cataract or start an infection which if unchecked ends in a deep abscess, panophthalmitis, necessitating the enuclea-

tion of the eyeball. A severe compression of the globe may also initiate a cataract or tear the choroid. Prolonged exposure to great heat is responsible for the peculiar kind of cataract found in glassblowers and puddlers. The destruction of the macular region may follow excessive exposure to brilliant sunshine especially when reflected from the snow or when a solar eclipse is viewed without sufficient protection. The macula may be damaged when a worker using an acetylene torch fails to wear his goggles.

The classification of industrial accidents and hazards has been summarized by many commissions. We register one caution in regard to accepting the accuracy of statistical information derived from Compensation Board reports, namely, the amount of ocular damage does not always correspond to the percentage loss of vision on which the award is made.

A facetious writer might start the next paragraph with the heading, "What Price Beauty?" The sale of cosmetics has reached enormous proportions. Some beautifiers are most destructive in their action. "Lash-lure," an eye-lash dye has been reported to have produced marked inflammation of the eyelids, the conjunctiva and the cornea and it is conceivable that if such an activating agent is not recognized and its use discontinued, blindness may ensue. Some hair-dyes have a similar deleterious effect.

Coincident with the changes in feminine apparel, there has been a widespread demand for depilatories and consequently some very harmful ones have been placed on the market. The thallium containing mixtures such as Koremlu have precipitated a general inflammation of the peripheral nerves and when the optic nerve is involved, the patient often becomes blind.

Fortunately, we live in a progressive age when medical men are fully aware of their tremendous responsibilities to conserve vision and prevent blindness by caring for the baby, the child, the mature adult and the senile. A comprehensive program for the prevention of blindness should have as its activating, inspiring leaders ophthalmologists,

obstetricians, physicians, broad-minded conscientious educational authorities, public health agencies, the nursing and sociological forces and the eugenists. The plan and purpose of this work will continue to broaden as it has since its inauguration by the Medical Society of the State of New York. To accomplish the most good and advance the program farthest, we must understand that there is no demand for a revolution in the practice of medicine, there is no need for a cataclysmic upheaval or for displacement of anyone in the medical group and no reason for the injection of artificial stimuli by new or old pseudo-medical lay organizations, but there are excellent reasons for enlisting all interested in the actual bonafide warfare in a mass attack for the eradication of blindness under the direction of organized medicine.

As we have noted that the eyes may be damaged before birth, we should initiate and carry through a campaign for the enactment of a law making it mandatory on everyone who wishes to marry that they be examined and found free from active transmissible infections like gonorrhea and syphilis. This is neither a theoretic nor impossible measure.

Much is being written but less said regarding the necessity of sterilizing the unfit. Those interested in the reduction of certain types of congenital blindness are urged to support proper legislation directed toward the biological improvement of the race.

In the enlightened portions of New York State, there is little need for an active campaign to arouse the interest of the mother in the health of her expected child. There is, however, and I fear there always will be, the necessity for constantly telling thousands of prospective mothers what prenatal care means to them and their babies. For example, it is conceded that if a mother is syphilitic, her child can be immunized if treatment is started early in the pregnancy.

The attending physician can by the dissemination of this information and the application of therapeutic measures greatly aid in the control of maternal syphilis. Interstitial keratitis would then be reduced and some day it might be

abolished. Furthermore, it has been demonstrated that syphilis is a cause of hereditary dystrophies and deformities. Therefore, many of our congenital ocular defects might be materially influenced, perhaps to a greater extent than some of us dare hope.

Syphilis is a menace to the eyes of persons of all ages and the problem of control is most complex, involving so many customs, convictions and emotions that it seems well nigh impossible to lessen or remove the scourge. Because of these various barriers, the forces of justice and health must continue to present a united and a stronger front to conquer the vile destroyer of sight, happiness and even life. Legislation will not remove the pestilence. Sometime ago in a discussion of blindness a proposition was presented that everyone should have a Wassermann test and further that they should be retested at the end of definite periods. It is fortunate that no one has tried to enforce such a scheme for it would tend to nullify some of the good that is being accomplished by the more extensive use of the diagnostic serological methods. The positive Wassermann reaction occasionally indicates something other than syphilis and the reaction may be negative even when syphilis is present. The registration of a syphilitic by name is most distasteful to me and surely the field of control could be enlarged if the report was submitted without name or address. This is not a new proposal for the method has been used successfully in some parts of the world.

No one can question the fact that the mother must be well nourished if she is to bear a healthy child, but we must remember that what is adequate for one group may not be sufficient for another and that approved hygienic surroundings during the puerperium are subject to wide variations. An attempt to standardize home, food and care will, I fear, delay or even defeat the purpose of those who are laboring to improve the status of American motherhood. The obstetricians can be relied upon to prescribe the necessary food elements for the proper development of the newborn and the maintenance of the mother's health.

In 1881 Credé, a practicing obstetrician of Leipzig, made the announcement that it was possible to materially reduce the incidence of the blindness of the newborn. His revolutionary procedure was accepted by the medical profession of the entire world and in 1887 the members of the Medical Society of the State of New York started an active campaign for the promulgation of his discovery. Since that time, many organizations interested in the prevention of blindness have contributed their part in spreading the gospel of prophylaxis.

As soon as the baby is born, the eyes are wiped with a soft cotton swab, bathed with boric acid and two drops of a 1 per cent nitrate of silver solution instilled into the conjunctival sac, not on the cornea. If there is more than a transitory silver reaction, special care must be taken to keep the eyes clean and the services of a competent eye specialist secured. Although in many states some method of prophylaxis is mandatory, the exact medication is left to the discretion of the attending obstetrician. This, I believe, is unfortunate, and although I am opposed to prohibitory regulations and rules, I have repeatedly urged the exclusive use of nitrate of silver, for probably every other drug has at one time or another proved inefficient. This method of preventing ophthalmia neonatorum is taught to every medical student and every midwife so that now there is less danger of the infection than formerly. The rigid enforcement of this important measure must be continued.

When the infant shows any signs of malnutrition, extra care must be taken to prevent xerophthalmia, which can in most cases be checked if promptly recognized as a destructive corneal lesion and not considered a mild conjunctivitis until it is too late to save the cornea.

The baby who is born without defects must be constantly guarded, for eternal vigilance is the price of normal sight.

If those associated with children knew how to instruct them in the correct methods of play, it would be possible to prevent many accidents. Some parents object to their child wearing glasses. They fear that his eyes will be injured.

Millions of children wear glasses and the number of eyes that are cut when the lenses are broken is extremely small; so that it does not constitute a serious risk. Heavy cumbersome, non-shatterable glasses are now obtainable but because of their weight they annoy the wearer and he discards them at the time when they are needed most. In some communities the air gun has received its proper legal condemnation. The prevention of accidents to the eyes of children should constitute an important continuous part of any crusade against blindness. The spasmodic Fourth of July scare is helpful but too limited in scope.

I know of few preventive measures which pay larger dividends of satisfaction than the early, efficient, skillful care of injured eyes. If everybody understood that such eyes do not require an instantaneous diagnosis and treatment, many which are now lost might be saved. At the time of the accident, the eye should be covered with a clean cloth and the specialist who is to attend the case carefully selected. Before an injured eye is removed, it is advisable to have a consultation. The danger of sympathetic ophthalmia is real, although modern, efficient treatment has greatly lessened its incidence.

Many agencies have combined to protect the worker in hazardous occupations. The machines are guarded, the illumination sufficient and goggles are used in all properly supervised factories.

The lighting of home and school room has been improved immensely as a result of the almost universal use of electricity, but there are many details such as nearness to the source of illumination, the strength of the electric bulbs, direct and indirect lighting, the reflecting background, the color of the light and the position of the reader or worker which call for more investigation.

How many of you know that you can telephone to your local electric light company and ask them to send an inspector to check over the lighting of your home? A competent investigator will accurately measure the amount of light needed in every room and for every purpose. This service

was instituted by the Niagara Hudson Company about seven months ago and has already received widespread endorsement. When you get home ask if your company is doing this, for I am sure that if it is not the management will be glad to do so as soon as it appreciates that you wish it. This is an example of true public spirit as applied to the conservation of vision.

Do you fully appreciate the necessity of a careful, complete physical examination of every child before he enters school and have you seriously considered that the family physician is the most important link in the chain which results in the development of a good citizen? And I wonder how many public health workers can explain their recommendations for free dispensary service when they know that the child should go to a private physician's office? To that crowd and others who are attempting to foist new methods of practice upon the medical profession, I wish to call attention to the fact that this is still the United States of America. Experiments and experience have proven the futility of trying to engraft foreign methods of group herding upon the liberty loving people of America. I sincerely hope and pray that individual effort will always remain as our guiding national inspiration and that those who are influenced by selfish motives to attempt the implantation of mass socialism may be exposed under the brilliant, searching light of a reawakened individualism.

The pre-school child must also be examined and the ideal place for this is the family physician's office. Concentration on this activity will prove to be of inestimable value not only as regards eyes but also general health.

The prevention of considerable blindness rests in the hands of the obstetrician and the pediatrician for the trouble may develop before, during or immediately after birth.

It is important that diseases of the eye be recognized as early as possible. To assist in this, the inspection of school children became one of the functions of the New York State Education Department in 1913. Every child in a public

school is supposed to have his vision tested once a year and if an imperfection is found by this superficial test, the parent or guardian is notified. These inspections have revealed a great many eye abnormalities and saved some children from blindness. Raising the morale of the child with defective vision by improving his sight has materially helped the teachers to get better results from their instruction. A school inspection is not an examination. Many children who need expert eye care are overlooked in the school test. This should be stressed and explained for too many parents believe their children's eyes are normal simply because they happen to read a given line of letters.

School inspection like all mass medical examinations is sometimes open to criticism but it is the best procedure which can be proposed at this time. The parochial and private school children are not always included in the scheme so that a large percentage of our growing youth do not receive the benefits of this cursory investigation.

It is often said that too many eyeglasses are prescribed. That is admitted but who is to tell when a patient should have glasses, a trained medical observer or a seller of lenses?

When a child is found to have uncorrectible, defective vision of such a degree that he cannot see the usual type of the text book, he should be admitted to a sight-saving class. If the defect is so great that he cannot even see special work, then he must be taught in a private or state school for the blind. Sight-saving classes are in many places a dumping ground to which the mentally defective, hard of hearing and incorrigibles are sent. Those interested in the prevention of blindness should assert themselves at this time and insist that no one is admitted to a sight-saving class for any other reason than poor vision. A critical inquiry will prove that this reasonable suggestion is most timely. A child who has one eye with normal or nearly normal vision should not be placed in such a class for he soon considers himself handicapped, and may by his inability or unwillingness to work become a state charge. In this connection, I

sometimes wonder if social workers are more interested in statistical tables than in the application of the laws inscribed on the ancient mosaic stone tablets.

Medical inspectors frequently encounter cases of cross-eye. Remember that a turned eye is either already poor-sighted or will become so unless corrected. The earlier the child is placed under treatment, which consists of accurate testing for glasses under "drops," occlusion of the better sighted eye, exercise and operation; the more satisfactory the result. Glasses can be worn as early as the first year of life. Don't procrastinate. Thousands of young men were rejected for full service at the time of the World War because of unrecognized or ineffectually treated cross-eye. The economic importance of the cosmetic blemish and crippled sight is appalling.

Rapidly progressive myopia must be considered as an individual problem. The most skilled care is required, no mass treatment will suffice. Every parent must be taught that long delay is dangerous, poor care costly and cooperation essential, for, if the child does not wear the glasses nothing can be done to control the progress of the disease.

Early adult life is a period of great danger because of the intermingling of the sexes. Vicious movies, degrading exposure and lack of moral control, especially when under the influence of alcohol, when removed from proper home restrictions or when tempted by those about whom the Proverbs of Solomon raise warnings and protestations, all play an important role in disseminating disease.

The greatest extension in the field for prevention of blindness lies in the reestablishment of moral codes and the return to the strict biblical injunctions of a clean life. To those who wish to save most eyes, there is one high road to success, prevent syphilis and gonorrhea. The day of smug secretiveness is past, birth control measures and contraceptives are known to all. Let us be more open in our condemnation. It is not sufficient for us to state the blunt facts of the woes that follow infection. The clergy and the lay organizations must shoulder the brunt of this battle.

Physicians have always told children of these dangers but rarely except in unusual cases have they really explained the dire effects which follow straying from the paths of righteousness. This subject is distasteful to many, but how much worse are the penalties of ignorance or perverseness?

The hygienic rules of life must be followed if we wish to maintain occular health. Excessive indulgence in alcohol or tobacco, over-eating and over-work, especially mental, are reflected on the sensitive perceiving apparatus of the eye and may cause damage to the optic nerve or retina.

Unscrupulous purveyors of drugs and mechanical appliances fatten on cataract cases. There are few places where the faker finds more gullible individuals than among those suffering from the slowly progressing forms of cataract. When you consider that some cataracts may progress so slowly that even when re-examined at ten-year periods the advance is so slight as to be hardly perceptible, you will appreciate the fruitfulness of this field. When the untrustworthy, the uninformed or the untruthful say that they are controlling or stopping the progress of cataracts by any known method, I am skeptical. I wish to have you thoroughly understand the chronicity of the process and particularly that a lens opacity may reach a certain stage and then show no progression for years, and again I tell you that there are no drugs, no treatments or no devices which have altered the progress of any senile cataract. If anyone wishes to controvert this statement all I ask him to do is present properly controlled cases to prove his statements. Therefore, don't delude yourselves, don't mislead patients and don't urge friends to undergo expensive, time consuming treatments the results of which are valueless.

When a cataract has reached a certain stage of growth, and this does not mean that the sufferer has become blind, an operation will in most cases restore sight. There is so much talk about special cataract procedures that a layman is confused when it comes to the selection of an ophthalmic surgeon. The operator must use the method which is best for him and the one that gives the greatest promise of a

successful outcome. Anyone who has followed a cataract case understands that after the eye has healed glasses are worn to take the place of the lens, the cataract, which was removed. The extraction of a cataract is one of the most beneficial of all operations, for the patient is taken from darkness and brought into light.

You recall that we said the diagnosis of glaucoma was a very technical procedure. The treatment of the disease calls for unusual knowledge. The patient suffering from primary acute glaucoma must be operated upon if the sight is to be restored. The procedure of choice is an iridectomy, a removal of a piece of the colored portion of the eye.

Simple non-congestive glaucoma may under certain conditions be controlled by the use of miotics, drugs which contract the pupil. When, however, it is noted that the field of vision is contracting, the elevated intraocular tension unaltered, and the ophthalmoscopic changes more manifest, then an operation is necessary. The object of the mechanical interference is to permanently reduce the excessive intraocular pressure. A great many operations have been proposed and performed. Unfortunately, the results are not all that we wish. The sufferer with glaucoma must be cooperative and willing to do whatever his physician considers best. He should know something about the clinical course of glaucoma, he must continue to use his eyes, be taught to maintain an hopeful outlook and appreciate that at any time the disease may be controlled and some vision maintained for life.

When blindness threatens the patient with hypertension, arteriosclerosis and other constitutional diseases, he must be under the combined supervision of the internist and ophthalmologist.

The treatment of tuberculosis of the eye follows the rules accepted for the care of the pulmonary invasion. The use of the eyes is strictly regulated and in suitable cases tuberculin administered.

There are few conditions more distressing than detachment of the retina. Innumerable methods of treatment have been proposed and followed for its relief but, unfortunately, the results have been disappointing. During the past few years new hope has been given to the sufferer of detachment by the more universal acceptance and application of present-day knowledge regarding the disease process. The patient is placed in appropriate surroundings and after very technical and repeated examinations, the rent in the separated portion of the retina is outlined and then by means of chemicals, galvano-cautery or high frequency electric currents, the surgeon attempts to seal the opening and reattach the retina to its former base. The latest form of treatment, diathermy, seems to be the one on which most of us now depend. The operation is done under a local anaesthetic and the patient remains quiet in bed for several weeks. In the favorable case the retina is replaced and sight restored. This newest operation has not received the widespread publicity which it deserves. Time plays an important part in the restoration of vision for if the retina has been separated from the choroid for too long a period, even if the mechanical replacement is secured, function is not restored. We may confidently expect that more patients with a detachment of the retina will present themselves for an early operation when they learn of this improvement in technical results.

When a cancer is found in an eye, the eyeball should be enucleated. There are very few exceptions to this rule, one is in bilateral glioma where radium may be tried. A few cases have been successfully controlled by its use.

The neurologist by means of the ocular symptoms and signs is able to localize brain diseases; meningitis, tumors or abscesses. The intraocular end of the optic nerve is such a delicate indicator of pressure and inflammation that much confusion still exists in diagnosing the former from the latter. Fortunately, modern stereoscopic fundus photography offers a most accurate method of differentiation for by the pictures the earliest signs of obscure intracranial diseases are often quickly and correctly interpreted. When

we examine the domain of brain surgery, we are amazed at the skill and daring of the intrepid workers in this field. Never in the history of mankind has there been such a chance of preserving or restoring sight endangered by brain pressure. The marvelous progress of this superb endeavor is evidenced every day. When the optic nerves or tracts are compressed by tumors or by pus collections, their integrity is threatened and an operation becomes imperative.

The lesions of multiple sclerosis may simulate the retrobulbar change which results from nasal sinus infection, diabetes and chemical poisons, including alcohol and tobacco. The diagnostic skill of the physician is sometimes taxed to decide which is the causative factor.

To the trained ophthalmologist this summary may be uninteresting, to the non-medical members of the groups engaged in the prevention of blindness the citations should appeal for they form the basis of our arguments for relief.

When we consider all of the possible causes of poor vision, there should be no difficulty in arousing the interest of everyone in a more intensive campaign for the prevention of blindness. The scope of such a movement would be boundless, the opportunities for service unlimited and the rewards soul-satisfying. The task would be stupendous for the ramifications of disease lead us into countless embarrassments and the ways of prevention are infinite.

The members of the medical profession are keenly alive to their obligations and responsibilities, they are willing and anxious to initiate and carry forward plans for the early recognition of the potential causes of poor vision, expand their present organizations and cooperate with worthwhile established agencies. They are not willing to be further exploited or dictated to by their inferiors in understanding and skill. They object to local guilds or local blind worker groups assuming the power to select physicians to care for sick eyes.

We trust that those who have a deep interest in the prevention of any disease will understand this commendable

attitude of the sincere physician and cease to irritate him by assuming unwarranted dictatorial powers.

The ophthalmological sections of our State and National Associations and our special eye societies lead the way to ocular health. Those who wish to do most to prevent blindness should enter into a closer union with them. The astute leaders of medicine and the dictators of lay and legal associations are cognizant of the needs.

When we investigate the agencies working in the preventive field, we promptly acknowledge the achievements of the State Departments of Education, who by their almost universal system of school inspection occupy the most strategic and strongest position for the early recognition of visual defects. The State Departments of Health by their activities in the control of venereal infections stand high in the list of the important factors in the prevention of blindness.

The National Society for the Prevention of Blindness, a voluntary organization founded in 1915, has succeeded in doing a difficult task in an admirable way. It applies the facts advanced by physicians to alleviate the condition of the blind and prevent visual loss. The work of its successful administrators will always shine as a light in the field of darkness and as time passes a new, broader and more comprehensive program will be established to use the technical skill of more ophthalmologists, more obstetricians and more physicians. This will add greater luster and more brilliance to the Society's long record of achievements. The present director and his assistants merit our praise and approbation for their past accomplishments and our sincere good wishes for the future.

The Departments of Labor and Compensation have aided materially in improving the condition of the worker and we commend their efforts. The State Commissions for the Blind can do much more and better work if they, like others, accept organized medicine as an equal partner. Lastly, we speak of the local associations which combine prevention with care for the economic conditions of those

already blind. Their usefulness will be increased if they follow the suggestions of medical men.

In conclusion, let us seriously ask, "Where does my unit fit into the complicated scheme of a cooperative, unified, efficient Prevention of Blindness program?" And then let us triumphantly advance under the bright flag of hope which bears upon its silken folds the words, "Under inspired medical and trained social leadership all forces combine to conquer the causes of blindness."

A NOTE ON NARCOTICS IN ANCIENT GREECE AND IN ANCIENT CHINA[1]

EDWARD H. HUME

I. *Narcotics in the Odyssey.*

The word φαρμακον occurs in the Odyssey sixteen times. In the passage quoted below it signifies a remedial, sedative or narcotic drug. In other passages it refers either to a poison, smeared on arrows or mixed with food; or to a magic or enchanted drug. The passage quoted occurs in the fourth book of the Odyssey, lines 219 to 230 inclusive; the scene is in the palace of Menelaos at Sparta, years after the sack of Ilium. Telemachos, son of Odysseus, and Peisistratos, son of Nestor, have set out from Ithaca to find Odysseus if he be still alive, and have come to inquire of Menelaos and Helen. It is at the close of the day, and all are weary:

"Then Helen, born of Zeus, planned otherwise. Straightway into the wine of which they were drinking she cast a drug to assuage suffering and to dispel anger, and to cause forgetfulness of all ills. Whosoever should drink this down, when mingled in the bowl, would not, in the course of that day, let a tear fall down over his cheeks; not even if, before his face, his brother or his beloved son they should slay with the sword, and with his own eyes he should behold it. Such cunning drugs had the daughter of Zeus, potent drugs, which Polydamna, the wife of Thor, had given her; a woman of Egypt, for there the ploughed earth, giver of food, bears greatest store of drugs; many that are potent when mixed and many that are baneful.[2]"

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[1] Read at the Meeting of the Section of Historical and Cultural Medicine November 1, 1933.

[2] Modified from the translation by A. T. Murray in the Loeb Classical Library.

II. *Narcotics as Used by Pien Ch'iao and Hua T'o of China.*

1. *Pien Ch'iao.*

In Volume 105 of the *Annals of History*, a great Chinese classic, there occurs a long biographical note about Pien Ch'iao, a physician of distinction who lived about 255 B.C., in the city of Cheng in the prefecture of P'u Hai (possibly in the modern province of Honan). No name stands higher than his in the annals of Chinese medicine, and the honor paid to him is wholly comparable to that which the Western World pays to the memory of Hippocrates. The passage quoted is found in the writings of Lieh Tze, a later historian (Lieh Tze T'ang Wen P'ien).

"Two men, Lu Kung-hu and Chao Ch'i-ying, fell ill and came together to seek treatment from Pien Ch'iao. After treating them, when both were recovered, he said, calling them by name, " The illness from which you suffered previously came to your organs from external influences and was susceptible to medical treatment. You now have a malady which attacks both of you together. Do you wish it treated?" Both men asked that he first give them the results of his examination.

Pien Ch'iao addressed Kung Hu and said, "Your will is strong but your spirit is weak; hence you are strong in one respect and weak in another. The will of Ch'i Ying is weak, but his spirit is strong. If your hearts were exchanged, there would be an equilibrium and the result would be good."

So then Pien Ch'iao caused the two men to drink a drugged wine, which made them insensible, as if dead, for three days. He cut open their chests, investigated and exchanged their hearts and replaced them, employing potent drugs. When they recovered consciousness, both men were as at the first, took their leave and went home.*"

* Modified from the translation by E. Faber.

2. *Hua T'o.*

Probably the most famous surgeon in Chinese medical history was Hua T'o, born about 190 A.D. There is a description of his use of a narcotic wine in the *Annals of the Three Kingdoms,* but a more concise description is to be found in the section on Medicine, number 525, in the Ku Chin T'u Shu Chi Ch'eng. The latter text is followed below:

"Hua T'o used but few drugs. His perception was accurate for the smallest quantities so that he never used scales for weighing medicines. Needles and cautery he used in but few places. If the disease proved resistant to acupuncture and if drugs proved unavailing, he then first caused the patient to swallow wine containing an anaesthetic effervescent powder, which produced intoxication and complete insensibility. He then cut open the belly or the back, as the case might be, cut and withdrew (the diseased organ), then adjusting everything. If the malady were in the bowels or the stomach, he cut these open, cleansed them thoroughly, and completely removed the evil traces of disease. Thereafter he sutured the wound and applied a potent ointment. In four or five days healing was well under way. Within a month all was restored to a normal state."

III. *A Discussion of the Possible Nature of the Pharmacals Described.*

Prior to 1918, there was not available any adequate discussion of the nature of the drug used by Helen of Sparta to bring sleep to her guests. Some thought it was *Cannabis indica* or hashish. In that year, however, Oswald Schmiedeberg (*Schriften der Wissenschaftlichen Gesellschaft in Strassburg,* 36 Heft, 1918, "Ueber die Pharmaka in der Ilias und Odysee" p. 3, Das Pharmakon Nepenthes, p. 9) summed up the work of earlier investigators by saying that no other drug than opium would satisfy the description in the Odyssey. The drug used by Helen caused those who took it in wine to lose both somatic and psychic sensibility. He points out the difficulties in assuming that opium is the drug in question because of the reference to its having been brought from Egypt. In that country, he quotes Woenig as

saying, not a single picture of the poppy is found in ancient monuments except that, in the garland of the Princess Nsi Chousu, there appear to be flowers of *Papaver rhoeas*. Schmiedeberg goes back to the writings of Hippocrates and studies the passages where the poppy is mentioned, concluding from a study of these passages that there is no reason to believe that opium was not known to the ancient Greeks. We do not yet know whether there was any contact between the pre-Islamic Arabs and the people of the Homeric world. We know that opium was taken to China by the Arabs in the ninth century A.D. The knowledge of other Arab contacts is still entirely inadequate. Schmiedeberg concludes that Helen must have used dried opium and placed this in the wine that she gave to Telemachos and his companion.

In regard to the narcotic drugs used by Pien Ch'iao or Hua T'o, there is not yet available any exact source material. The former is reported as using *tu chiu* "toxic wine"; the latter used *ma-fu-san* "anesthetic powder." It is interesting to note that in the two Chinese passages adduced, as in the Greek passage, a wine was the vehicle for the drug used. When Pien Ch'iao used a "toxic wine," there is every reason to believe that he actually had recourse to a drugged wine. As indicated above, there are no records to show that opium was known in China when either of these surgeons lived.

Ma is the generic name for hemp (*Cannabis sativa*). The male plant is used for its fibre; the female plant for the medicinal properties of its seed kernels and flowers. The Chou Li (see footnote) states that the *ma* seed was prescribed for the Emperor as medicine. Probably the seed kernels alone were so used. In the passage quoted, however, *ma* unquestionably means "anesthetic." This use of the word is common throughout the country. A farmer reports that his hands and feet are numb, *ma mu*. Laufer (*Sino-Iranica*, p. 582) says that the Persian word *bang* describes a narcotic prepared from hemp seeds, which was used as a sub-

* The Chou Li: the "State Ceremonial of the Chou Dynasty" (1122-255 B.C.)

stitute for opium. The Sanskrit word is *bhanga.* "The Persian word is also traced to Avestan *banha,* a narcotic, but it seems to me preferable to assume direct derivation from Sanskrit in historical times."

Other drugs used for their narcotic effect include the following:

1. *Aconitum fischeri.* (In Europe, "monk's hood" or "wolf's bane"). The Chinese name is *Wu t'ou,* a plant used at least as far back as the end of the third century A.D. by the physician Ko P'u. Large quantities are shipped down the Yangtze River from Szechuan. The Sanskrit term is *visha,* probably *Aconitum ferox.*

2. *Arum pentaphyllum* and *Arum triphyllum.* The Chinese generic name is *Hu chang.* This plant was known to the Greeks as αρον. In England it is commonly called "cuckoo-pint" or "wake-robin."

3. *Datura alba.* In 1662, J. Davies, translating "Mandeslo's Travels" said, "The Indians call this drug *doutro* or *datula.* It is a drug that stupefies the senses. The Turks and Persians call it *datula."* Two species are described in India, *Datura fastuosa* and *Datura metel;* in Western Asia a species exists known as *Datura stramonium,* or the common thorn-apple. The drug is said to stupefy and poison. The Marathi name is *Dhatura,* while the Sanskrit uses both *Matula* and *Dhatula.* The Chinese have a drug which stupefies, called *Mant'o lo hua,* which is evidently a transcription from the Sanskrit *Matula.* The Encyclopedia of Pharmacals identifies it, however, as *Lycium chinense.*

The plant definitely identified as *Datura alba* is *Nao yang hua,* "the flower that makes sheep dizzy." Some identify this plant with *Hyoscyamus niger.*

4. *Hyoscyamus niger* (Henbane). Laufer (*loc. cit.*) makes it clear that *bang* in Persian refers to *Hyoscyamus,* but that the word is derived from the Sanskrit *bhanga,* which is *Cannabis sativa.*

Further researches, historical, botanical and pharmacological, are needed before there can be more complete identification of the narcotics used by ancient Chinese surgeons.

REPORT OF THE COUNCIL
CHARGES AGAINST DR. FRED H. ALBEE

The Council at its meeting held on May 23, 1934, adopted the following resolutions:

"RESOLVED, That the Council herewith charges Dr. Fred H. Albee as follows:

"1. That he furnished information and material for the purpose of publicity to Mr. S. B. Murdock, General Passenger Agent of the Seaboard Air Line Railway Company which resulted in the printing on the menus used in the dining cars of that Company, and on hand bills distributed in the streets of St. Petersburg and Miami, Florida, in the fall of 1933, of such information and material which constituted a form of advertising of such character as to invite attention to himself and his professional position and connections.

"2. That such action of Dr. Albee unfavorably affects the character of the medical profession and the interests and reputation of the Academy.

"3. That he failed to take effective action to stop such advertising after it had been brought to his attention.

"RESOLVED, That the Council hold a hearing in accordance with the provisions of Article IX, Section 9, of the By-Laws of the Academy on June 19, 1934, at 4 o'clock in the Council Room of the Academy of Medicine, 2 East 103rd Street, in the City of New York, at which the foregoing resolution shall be read to Dr. Albee and he shall be given full opportunity to make such statement as he may wish with regard to the charges therein contained and may have such witnesses testify in his behalf as he shall desire.

"RESOLVED, That the Secretary of the Academy be and hereby is authorized and instructed to send a certified copy of the foregoing resolutions to Dr. Albee."

A certified copy of these resolutions was sent to Dr. Albee who appeared with counsel at the special meeting of the Council held June 19, 1934.

At an adjourned meeting held June 26, 1934, the Council by unanimous vote found Dr. Albee guilty on all of the charges, and the Council, acting under the authority conferred upon it by the Constitution and By-Laws of the Academy, suspended Dr. Albee from The New York Academy of Medicine for a period of one year from June 26, 1934.

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Fellows of the Academy who can spare copies of the June, 1934, number of the Bulletin are requested to send them to the Assistant Secretary at the Academy.

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Wroth, L. C. An American bookshelf, 1755. Phil., Univ. of Penn. Press, 1934, 191 p.

DEATHS OF FELLOWS OF THE ACADEMY

Allen, Thomas Herbert, M.D., Mahopac, New York; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1875; elected a Fellow of the Academy January 6, 1881; died September 22, 1934. Dr. Allen was a member of the County and State Medical Societies and a Fellow of the American Medical Association. He was consulting physician to City Hospital.

Davis, Fellowes, Jr., M.D., 5 Place Vendome, Paris, France; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1899; elected a Fellow of the Academy May 15, 1913; died, September 5, 1934. Dr. Davis was a member of the surgical staff of New York Hospital from 1904 to 1914, and attending obstetrician to the New York Nursery and Child's Hospital from 1911 to 1921.

Easton, Charles Daniel, M.D., 510 Park Avenue, New York City; graduated in medicine from Harvard Medical School in 1904; elected a Fellow of the Academy April 1, 1926; died, October 4, 1934. Dr. Easton was a member of the County and State Medical Societies and a Fellow of the American Medical Association. At the time of his death he was physician to Newport Hospital, Newport, Rhode Island.

Fuchsius, John Hancock, M.D., 151 Centre Avenue, New Rochelle, New York; graduated in medicine from Bellevue Hospital Medical College, New York City, in 1899; elected a Fellow of the Academy January 4, 1912; died, September 5, 1934. Dr. Fuchsius was a Fellow of the American Medical Association and a member of the County and State Medical Societies. For a

number of years he was associated with the Manhattan Eye, Ear and Throat Hospital, Harlem Hospital and Post-Graduate Hospital in New York City and for twenty-six years with the New Rochelle Hospital in the ear, nose and throat department.

SATTERTHWAITE, THOMAS EDWARD, B.A., M.D., LL.D., 7 East 80 Street, New York City; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1867; elected a Fellow of the Academy May 4, 1882; died, September 19, 1934. Dr. Satterthwaite was a former president of the New York Pathological Society, of the American Therapeutic Society and of the Medical Society of Greater New York. He was one of the founders of Babies' Hospital and its President from 1894 to 1899, and of the Post-Graduate Medical School at which he was Professor of Pathological Anatomy and Internal Medicine. For 10 years he was on the staff of St. Luke's Hospital, for 15 years Pathologist to Presbyterian Hospital, and was consulting physician to Post-Graduate, Orthopedic and Manhattan State Hospitals. He was a frequent contributor to medical literature.